

In the Claims:

Please cancel Claims 2, 3, 7, 8 and 12-15, without prejudice; and amend Claims 4 and 9 as indicated below. The status of all claims is as follows:

L 1. - 3. (Cancelled)

11 4: (Currently Amended) ~~The method of determining according to claim 3, further comprising:~~ A method of determining a magnitude of a sensing current to be supplied to an electromagnetic transducer, comprising:

supplying an electric current of a first current value to the electromagnetic transducer;

determining a physical quantity appearing in the electromagnetic transducer based on the electric current of the first current value;

supplying an electric current of a second current value, different from the first current value, to the electromagnetic transducer;

determining the physical quantity appearing in the electromagnetic transducer based on the electric current of the second current value;

deriving a variation in temperature of the electromagnetic transducer based on the change in the physical quantity;

determining the magnitude of the sensing current based on a derived variation
in temperature of the electromagnetic transducer; and

deriving an expected lifetime of the electromagnetic transducer based on the
variation in temperature when determining the magnitude of the sensing current.

2/ 5. (Original) The method of determining according to claim 4, wherein
said predetermined upper limit lifetime represents a sum of a minimum lifetime required to
the electromagnetic transducer and a margin to be added to the minimum lifetime.

3/ 6. (Original) The method of determining according to claim 5, wherein
said incremental value is stepwise reduced as the preceding second current value gets larger.

7. - 8. (Cancelled)

4/ 9. (Currently Amended) ~~The method of determining according to~~
~~claim 8, further comprising:~~ A method of determining a magnitude of a sensing current to be
supplied to an electromagnetic transducer, comprising:

supplying an electric current of a first current value to the electromagnetic
transducer;

calculating a first electric resistance value of the electromagnetic transducer based on a first voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the first current value;

supplying an electric current of a second current value, different from the first current value, to the electromagnetic transducer;

calculating a second electric resistance value of the electromagnetic transducer based on a second voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the second current value;

calculating a quantity of variation in temperature of the electromagnetic transducer based on the first and second electric resistance values; and

determining the magnitude of the sensing current based on a calculated quantity of variation in temperature of the electromagnetic transducer and;

deriving an expected lifetime of the electromagnetic transducer based on the quantity of variation in temperature of the electromagnetic transducer when determining the magnitude of the sensing current;

comparing the expected lifetime with a predetermined target upper limit lifetime; and

adding an incremental value to a preceding second current value so as to set a new second current value if the expected lifetime takes a value below the predetermined target upper limit lifetime.

~~10~~ 10. (Original) The method of determining according to claim ~~9~~⁴, wherein said predetermined upper limit lifetime represents a sum of a minimum lifetime required to the electromagnetic transducer and a margin to be added to the minimum lifetime.

~~11~~ 11. (Original) The method of determining according to claim ~~10~~⁵, wherein said incremental value is stepwise reduced as the preceding second current value gets larger.

12. - 15.

 (Cancelled)

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~~16~~ 16. (Original) A method of determining a magnitude of a sensing current to be supplied to an electromagnetic transducer for reading data, comprising:

supplying an electric current of a first current value to the electromagnetic transducer for reading data;

determining a physical quantity appearing in the electromagnetic transducer for reading data based on the electric current of the first current value;

supplying an electric current of a second current value, different from the first current value, to the electromagnetic transducer for reading data;

supplying an electric current of a predetermined current value to an electromagnetic transducer for writing data, which is paired with the electromagnetic transducer for reading data;

determining the physical quantity appearing in the electromagnetic transducer for reading data based on the electric current of the second current value; and

determining the magnitude of the sensing current based on change found in the physical quantity.

~~§ 17.~~ (Original) The method of determining according to claim ~~16,~~ further comprising:

calculating a first electric resistance value of the electromagnetic transducer based on a first voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the first current value;

calculating a second electric resistance value of the electromagnetic transducer based on a second voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the second current value; and

calculating a quantity of variation in temperature of the electromagnetic transducer based on the first and second electric resistance values in determining the magnitude of the sensing current.